

The Impact of Trauma Registry in Elucidating the Epidemiology of Childhood Trauma in North Central Nigeria

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Abstract

Background: Trauma is a major cause of morbidity and mortality globally. Paediatric trauma is on the increase due to violence, negligence and road traffic accidents.

Objective: to determine the aetiologic spectrum, treatment and outcome of paediatric trauma in the Jos University Teaching Hospital, a major referral Centre in North Central Nigeria.

Methods: A one-year prospective analysis of data from our trauma registry.

Results: There were 168 paediatric trauma patients with ages ranging from 4 months to 17 years (Mean = 8.5 years). There were 103 (61.3%) males and 65 (38.75%) females with a male to female ratio of 1.6:1. Road traffic collisions 78(47.5%), falls from heights 32(19.1%) and burns 26(15.5%) were the main source of injuries respectively while transported to hospital in private cars and none by ambulance. A few were brought in by public transport 14 (8.3%), police vehicle 3 (0.02%) and 16 (0.10%) were brought in in non-specified means. Injuries involving the head occurred in 94(56.0%) patients, extremities 37(22%), chest 10 (6.0%) and abdomen 9(5.4%) were recorded. About half 51(50.5%) required minimal intervention, while 38 (37.6%) had debridement. One hundred and thirty-three patients (89.3%) were treated and discharged home, 19 (0.11%) managed on outpatient bases, 6(4%) left hospital against medical advice and 9(6%) mortalities were recorded.

Conclusion: Paediatric trauma is cause of morbidity and mortality in our setting, there is a need for urgent preventive measures at primary, secondary and tertiary levels to reduce the incidence of morbidity and mortality from paediatric trauma in our environment.

Key words: Trauma Registry, Paediatric, epidemiology

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I. Introduction

Paediatric trauma is a major cause of morbidity worldwide and has been identified as the leading cause of death in this age group¹. There has been a significant increase in the occurrence of conflicts, automotive as well as domestic accidents in Africa with women and children being the worst hit². Nigeria has had its own share of ethno-religious crisis and terrorism with its attendant devastating effects. It has been reported that trauma accounts for more than half of paediatric surgical admissions³.

The six major killer diseases of children in our environment-malaria, pertussis, tuberculosis, tetanus, malnutrition and diarrhoeal diseases are predictable, preventable and controllable so also is paediatric trauma. However, these diseases have received so much attention in a bid to improving the health of children in the developing world but this has not been the case with paediatric trauma despite its public health importance. This approach may not be deliberate, but may be due to paucity of data showing the significance of paediatric trauma to the health of the child. In the western world, there has been a steady decline in the burden of paediatric trauma as a result of primary educational campaigns, secondary legislative enhancement and tertiary improvements in paediatric trauma care⁴. World Health Organization projected that by the year 2020, the years of potential life lost due to trauma will equal those lost from infectious diseases⁵. Despite this, in Nigeria there has not been any deliberate legislation on paediatric trauma prevention and not even a single paediatric trauma Centre/ national trauma registry that can serve as central data source to show the real burden of paediatric trauma that will attract the needed attention of all concerned.

More than 90% of global deaths due to injuries in children occur in low-income countries⁶. We present the initial analysis from our trauma registry specifically to investigate the scope of trauma among children with a view to describe the epidemiology, management and outcome.

II. Materials and methods

This is a one-year prospective, analysis of our ongoing trauma registry data from January 2012 to December 2012 focusing on the paediatric population (0-17yrs). All consecutive paediatric patients aged below 18-years presenting with trauma between January and December 2012 and fulfilled the criteria for inclusion in the Jos University Trauma Registry. Data was retrieved from our trauma registry established in January 2012. Data was retrieved from excel and analysed using Epi info version 3.5.1 for means, proportions and confidence intervals. The variables included patients' biodata, cause of trauma, mode of presentation, body parts involved, treatment offered and the outcome of management.

III. Results

There were 168 paediatric trauma patients captured in the trauma register, this represent 16.5% (CL 14.3% - 18.9%). Ages ranged from 4months to 17years, with a mean age of 8.5 years. There were 103 (61.3%) males and 65 (38.75%) females with a male female ratio (1.6:1). Road traffic collisions accounted for 78(47.5%) of the cases, falls from heights and burns 32(19.1%) and 26(15.5%) respectively. Industrial accident and stabs were 11(6.5%) each. Transported to hospital by private cars 135 (87.1%) and none by ambulance services. Head injuries accounted for 94(56.0%), Neck 8(4.8%), spine injuries 2 (1.2%), facial injuries 17(10.1%), Chest injuries 10 (6.0%), abdominal injuries 9(5.4%) and Extremity injuries 37(22%). Majority 51(50.5%) required minimal intervention (wound dressing and suturing) while 38 (37.6%) had debridement. Of all who had chest injuries, none required chest tube insertion. There were 133 (89.3%) treated and discharged home, 6(4%) left hospital against medical advice and 9(6%) mortalities were recorded

Table 1. age group and sex distribution of patients

Age group (years)	%
0-5	51(30.4)
6-10	58(34.5)
11-15	39(23.2)
15 -17	20(11.9)
Total	168(100)

Table 2. Aetiology of paediatric trauma

Aetiology	Frequency	percentage
RTA	78	46.4%
Falls from heights	32	19.1%
Burns	26	15.5%
Domestic accidents	11	6.5%
Gunshots	11	6.5%
Others	8	4.8%
Stabs/cuts	1	0.6%
Industrial accidents	1	0.6%
Total	168	100%

Table 3 pattern of injury

Region	Frequency	Percentage
Head	94	50.5%
Neck	8	4.8%
Facial	17	10.1%
Chest	10	6.0%
Abdomen	9	5.4%
Pelvis	5	3.0%
Extremities	45	26.8%
Total	168	100%

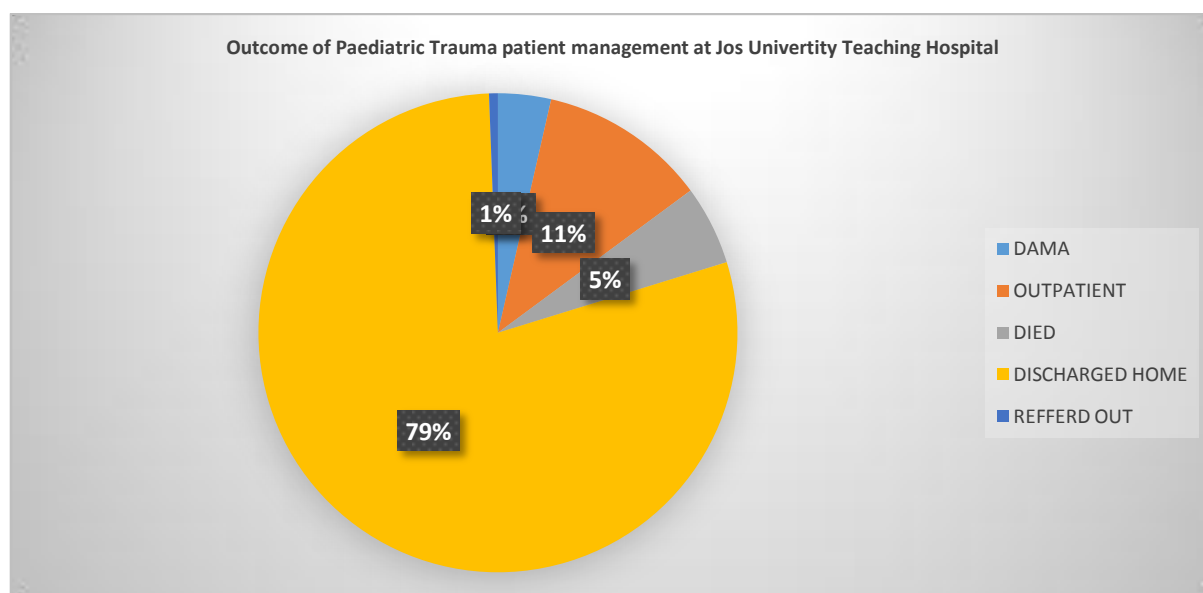


Fig.1 paediatric trauma management outcome at the jos univerty teaching hospital between January 2012 to December 2012

IV. Discussion

The records from the trauma registry showed that paediatric trauma constitute a significant portion of all trauma cases seen in our Emergency Room. Despite increased interest in paediatric safety, trauma still exerts a major toll among this age group.

The age range in our findings is in keeping with that reported in a study done in Owerri, the eastern region of Nigeria by Ekenze SO *et al*.

This may be explained by the fact that in our rural areas, children of school age who are usually very active, go to schools unaccompanied by responsible adults. In play grounds, children are often away from the attention of adults and they have poor judgment of potential dangers on their own,

In our study we found a slightly higher number of males than the females which is similar to a study done in India by Mukesh Sharma *et al*.⁸. Most studies reporting sex variation in paediatric trauma support this finding, however, the proportions vary. Simon *et al* in their study carried out in Tanzania, showed a slightly higher proportion of male to female ratio of 2.3:1⁹. The higher involvement of males in our environment could be attributed to their being hyperactive and adventurous therefore, likely to be involved in risky behaviors.

Road traffic accidents was the leading cause of injury followed by falls and burns, which is similar to findings by Adekanmi *et al*, in western Nigeria¹⁰. A study by Morgan k. *et al* in Iran however reported fall (>50%) rather than road traffic accident accounting for most trauma cases in the age group 12years and below¹¹. Other studies in India, the US and Gambia had similar findings^{8,12,13}. The high proportion of injuries from fall in their studies was attributed to paying less attention to child activity. In our own study, it may be due to bad roads, lack of adherence to traffic rules and unguided minors crossing the roads.

It is noteworthy to point out the occurrence of gunshot injuries among our study group. This is a worrisome observation because it was an uncommon occurrence our setting. Earlier studies from Nigeria did not record any gunshot injury^{14,15}. This is however, a common occurrence in war torn countries like Iraq as reported by Rebecca M. *et al*¹⁶. This new trend reported in our study can be explained by the increasing spate of crises and violence, worsened by uncontrolled use of small and light weapons with the unfortunate advent of improvised explosive devices used by insurgents^{17,18,19}.

Commonest body part injured was the head, followed by extremities. This compares with studies of Simonetal⁹. In studies done in Iran and Brazil, fall was the commonest aetiologic factor with more involvement of extremities than head and neck injuries^{12,13}. This suggest that the pattern of injuries may be predicted by the aetiologic factor.

In our study we found a mortality rate of 6%, which is lower than that reported by Ellen J *et al* in the United Kingdom, where they found mortality rates of up to 7.5% and 9.5% for those treated in trauma care and non-trauma centres respectively²⁰. Our lower motility may be explained by the fact that there are no designated paediatric trauma centres and therefore cases with severe injuries may not reach our hospital and the common practice of burying dead children with no need for mortuary services, may also be contributory to a deficiency in this hospital based data.

We noted in our study that no patient was transported by ambulance and most were transported via private vehicles not suitable for transporting trauma patients. This highlights the almost absent prehospital care system.

V. Conclusion

Paediatric trauma is fast becoming significant cause of morbidity and mortality in our setting therefore, there is a need for urgent preventive measures at primary, secondary and tertiary levels to reduce the incidence of morbidity and mortality in our environment. prehospital care system is also necessity in our setting all in a bid to improve outcome.

References

- [1]. Krug EG, Sharma GK, Lozano R. The global burden of injuries. *American journal of public health*. 2000;90(4):523.
- [2]. UNICEF. The impact of conflict on women and girls in west and central Africa and the UNICEF response: UNICEF; 2005.
- [3]. Hulme P. Mechanisms of paediatric trauma at a rural hospital in Uganda. *Rural Remote Health*. 2010;10(1):1376.
- [4]. Holland A. Paediatric trauma. *Journal of Paediatrics and Child Health*. 2005;41(12):623-4.
- [5]. Murray CJ, Lopez AD, Organization WH. The global burden of disease: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020: summary. 1996.
- [6]. Trauma ACoSCo. Injury Prevention. Paper presented by the subcommittee on Injury Prevention and control.
- [7]. Ekenze S, Anyanwu K, Chukwumam D. Childhood trauma in Owerri (south eastern) Nigeria. *Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria*. 2009;18(1):79-83.
- [8]. Sharma M, Lahoti B, Khandelwal G, Mathur R, Sharma S, Laddha A. Epidemiological trends of pediatric trauma: A single-center study of 791 patients. *Journal of Indian Association of Pediatric Surgeons*. 2011;16(3):88.
- [9]. Simon R, Gilyoma JM, Dass RM, Mchembe MD, Chalya PL. Paediatric injuries at Bugando Medical Centre in Northwestern Tanzania: a prospective review of 150 cases. *Journal of trauma management & outcomes*. 2013;7(1):10.
- [10]. Adesunkanmi AK, Oginni L, Oyelami A, Badru O. Epidemiology of childhood injury. *Journal of Trauma and Acute Care Surgery*. 1998;44(3):506-11.
- [11]. Karbakhsh M, Zargar M, Zarei MR, Khaji A. Childhood injuries in Tehran: a review of 1281 cases. *Turkish journal of pediatrics*. 2008;50(4).
- [12]. Snyder CW, Muensterer OJ, Sacco F, Safford SD. Paediatric trauma on the Last Frontier: an 11-year review of injury mechanisms, high-risk injury patterns and outcomes in Alaskan children. *International journal of circumpolar health*. 2014;73(1):25066.
- [13]. Ng'ambi T, Borgstein E. Epidemiology of paediatric trauma admissions at Queen Elizabeth Central Hospital, Blantyre. *Malawi medical journal: the journal of Medical Association of Malawi*. 2005;17(1):5.
- [14]. Gukas ID1, Opaluwa AS, Ihezue CH, Obekpa PO, Iya D, Ugwu BT, Nwadiaro HC Pattern of paediatric injuries in Jos, Nigeria. *Int J Inj Contr Saf Promot*. 2006 Dec;13(4):257-9.
- [15]. Hyginus, E.O., Okechukwu, U.J., Victor, I.M., Christian, O.C. and Anthony. U. (Epidemiology of Admitted Cases of Childhood Injuries in Nnamdi Azikiwe University Teaching Hospital Nnewi, Nigeria. *Annals of Tropical Medicine and Public Health* 2015 8, 272-275.
- [16]. McGuigan R, Spinella PC, Beekley A, et al. Pediatric trauma: experience of a combat support hospital in Iraq. *J Pediatr Surg*. 2007; 42:207-210.
- [17]. Udosen AM, Etimuna AU, Ugare GA, Bassey OO. Gunshot Injuries in Calabar, Nigeria: An Indication of Increasing Societal Violence and Police Brutality. *Afr Health Sci* 2006; 6:170-2.
- [18]. Okobia MN, Osime U. Civilian Gunshot Wounds in Benin City. *Niger Med Pract* 2001; 39:67-72
- [19]. Arya N. Confronting the Small Arms Pandemic. *BMJ* 2002; 324:990-1
- [20]. MacKenzie EJ, Rivara FP, Jurkovich GJ, et al. A national evaluation of the effect of trauma-center care on mortality. *N Engl J Med*. 2006;354(4):366-78.

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